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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/718,505

11/20/2003

Ronald D. McCallister

125.136USR1

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7590

11/26/2008

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EXAMINER

CORRIELUS, JEAN B

ART UNIT

PAPER NUMBER

2611

NOTIFICATION DATE

DELIVERY MODE

11/26/2008

ELECTRONIC

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/718,505
Filing Date: November 20, 2003
Appellant(s): MCCALLISTER ET AL.

David N. Fogg
For Appellant

EXAMINER'S ANSWER

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

This is in response to the appeal brief filed 9/25/08 appealing from the Office action mailed 3/25/08.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

May et al, "Reducing the Peak-to- Average Power Ratio in OFDM Radio Transmission Systems" 48th IEEE Vehicular Technology Conference, 18-21 May 1998, pp. 2474-2478.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 21-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 21, recites the delay is a **“fixed delay”**. However, the specification, as filed, does not provide proper support for such limitation as claimed. The same comment applies to claims 22 and 23.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 2-5, 8-11, 13-16, 18 and 20-23 are rejected under 35 U.S.C. 102(a) as being anticipated by May et al.

As per claim 2, May teaches a transmitter circuit see page 2474, col. 1, line 4 comprising inherently a modulated signal generator for generating a first modulated signal **s(t)** (note that in order to generate the modulated signal **s(t)** a generator has to be used, hence a generator is inherently provided in May) conveying to be communicated data having a first bandwidth and having a first peak-to-average amplitude ratio see page 2474, col. 2, lines 2-8 and page 2475, col. 1, lines 36-38; generating a constrained bandwidth error signal **K(t)** in response to said first modulated signal **s(t)** (note that in order to generate the error signal **K(t)**, a constrained envelope generator has to be used, hence constrained envelope generator is inherent in May et al) see page 2475, col. 2, line 1; combining said error signal **K(t)** with the modulated signal **s(t)** see page 2475, col. 2, last three equations inherently in a combining circuit (note that in order to combine the signals a combining circuit has to be used, hence a combining circuit is inherent in May) to produce a second modulated signal conveying said to be communicated data having said first BW and said first PAR see page 2475, col. 1 section B- page 2476, col. 1, first full paragraph; a delay component inherently coupled to the combiner and the modulated signal generator. (Note that since **the modulated signal s(t)** is available before the **correcting function k(t)** because the **modulated signal s(t)** is used to determine **the correcting function k(t)** (see page 2475, section III equations 2 and 3. Therefore, **the modulated signal s(t)** has to be delayed by a **fixed amount** in order to compensate for the processing delay associated

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with the calculation of the **correcting function $k(t)$** . Therefore, **a fixed delay** in May coupled to the combiner and the modulated signal generator is inherently provided. In addition, note the inventor submission filed on 7/5/05 in the sister application S/N 10/718,507, copy of which is provided in the "Appendix" section of the Appeal Brief, that seems to agree that a delay in May is inherent); a substantially linear amplifier inherently provided in May to amplify the second modulated signal (note fig. 1 of May that shows a substantially linear representation of the amplifier output, hence, a substantially linear amplifier has to be used in May). (In addition, note the inventor submission filed on 8/28/06 in the sister application S/N 10/718,507, copy of which is provided in the "Appendix" section of the Appeal Brief, that seems to agree that a substantially linear amplifier in May is inherent).

As per claim 3, May teaches that the error signal exhibits a BW equal to or less than said first BW see for instance fig. 3 and page 2476 bottom of col. 2.

As per claim 4, peaking unit intervals inherently occur when said first modulation signal exhibits magnitudes greater than a threshold; said constrained bandwidth error signal includes error burst for said peaking unit intervals, wherein each error burst spreads energy over a plurality of unit intervals and exhibits a peak in one unit interval said delay element inherently delays said first modulated signal so that error burst peaks substantially temporally coincide with said peaking unit intervals. See fig. 2.

As per claim 5, said error burst peaks exhibit amplitudes which are responsive to amounts by which magnitudes of said first modulated signal exceeds said threshold

As per claim 8, note that in order to generate the error signal $K(t)$, a pulse generator has to be used. Hence, a pulse generator is inherently provided by May note the error signal is filtered using a filter see page 2475, col. 1, section B, lines 13-15.

As per claim 9, a pulse is generated when the modulated signal exhibits a magnitude greater than a threshold see fig. 2.

As per claim 10 said pulse exhibits an amplitude which is responsive to a value by which said first modulated signal exhibits said magnitude greater than said threshold see fig. 2 and page 2475, col. 2, last three equations.

As per claim 11, see claim 2.

As per claim 13, see claim 3.

As per claim 14, see claim 2.

As per claim 15, see claim 4.

As per claim 16, see claim 5.

As per claim 18, see claim 2.

As per claim 20, see claim 4.

As per claim 21, the delay is a fixed delay (note the inventor submission filed on 7/5/05 in the sister application S/N 10/718,507, copy of which is provided in the "Appendix" section of the Appeal Brief, that seems to agree that a delay in May is inherent).

As per claim 22, see claim 21.

As per claim 23, see claim 21.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 7, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over May et al in view of Hedberg et al US patent No. 6,266,320.

As per claim 6, May teaches a transmitter circuit see page 2474, col. 1, line 4 comprising inherently a modulated signal generator for generating a first modulated signal **s(t)** (note that in order to generate the modulated signal **s(t)** a generator has to be used, hence a generator is inherently provided in May) conveying to be communicated data having a first bandwidth and having a first peak-to-average amplitude ratio see page 2474, col. 2, lines 2-8 and page 2475, col. 1, lines 36-38; generating a constrained bandwidth error signal **K(t)** in response to said first modulated signal **s(t)** (note that in order to generate the error signal **K(t)**, a constrained envelope generator has to be used, hence constrained envelope generator is inherent in May et al) see page 2475, col. 2, line 1; combining said error signal **K(t)** with the modulated signal **s(t)** see page 2475, col. 2, last three equations inherently in a combining circuit (note that in order to combine the signals a combining circuit has to be used, hence a combining circuit is inherent in May) to produce a second modulated signal conveying said to be communicated data having said first BW and said first PAR see page 2475, col. 1 section B- page 2476, col. 1, first full paragraph; a substantially linear amplifier inherently provided in May to amplify the second modulated signal (note fig. 1 of May

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that shows a substantially linear representation of the amplifier output, hence, a substantially linear amplifier has to be used in May). (In addition, note the inventor submission filed on 8/28/06 in the sister application S/N 10/718,507, copy of which is provided in the "Appendix" section of the Appeal Brief, that seems to agree that a substantially linear amplifier in May is inherent). Furthermore, at a page 2474 col. 2, section A-page 2475, line 1 May teaches transmitting the signals simultaneously using a plurality of codes. It does not explicitly teach that a CDMA modulator is used. However, as evidence by Hedberg et al, it is well known in the art to use a CDMA modulator to generate a plurality of code channels see fig. 2, for instance. Given that fact, it would have been obvious to one skill in the art to implement the generator of May as a CDMA modulator in the manner suggested by Hedberg et al so as to be compatible with system(s) that uses CDMA technology with the added benefit of avoiding degradation efficiency of the transmit power amplifier.

As per claim 7, note that Hedberg teaches that the modulator includes a Nyquist pulse shaping (spreading) filter 120a. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in May et al and the motivation to do so would have been the same as provided with respect to claim 6.

As per claim 17, see claim 6.

As per claim 19, see claim 6.

(10) Response to Argument

Applicant's arguments filed 9/25/08 have been fully considered but they are not persuasive. Applicant argues that col. 11, lines 46-54 provides support for the limitation **"fixed delay"** as recited in claim 21-23. However, a review of such section of the specification, noted by applicant, does not show such a support for the claimed subject matter. The specification at col. 11, lines 46-54 merely teaches that delay element 138 produces delayed modulated signal which is sufficiently delayed to compensate for propagation and other delays encountered in off-time constrained-envelope generator 106 and pulse spreading filter 134. There is no disclosure however that delay 138 is a **"fixed delay"**.

With respect to the rejection of claims 2, 14 and 18, Applicant argues that even if the examiner is correct that a delay in May has to be present this does not mean that May enabled the delay for one skill in the art. Examiner disagrees. Let's consider page 2475 of May col. 2, section III, it teaches a **correction signal $c(t)$** is generated by adding a **correction function $k(t)$** to the **modulated signal $s(t)$** . Note that since **the modulated signal $s(t)$** is available before the **correcting function $k(t)$** because the **modulated signal $s(t)$** is used to determine **the correcting function $k(t)$** (see page 2475, section III equations 2 and 3. Therefore, **the modulated signal $s(t)$** has to be delayed by a **fixed amount** in order to compensate for the processing delay associated with the calculation of the **correcting function $k(t)$** . Therefore, **a fixed delay** in May is inherently provided. Hence, since the delay in May is inherent for the reasons set forth above, May has to evidently enable the delay for one skill in the art once skill in the art,

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contrary to the applicant's position. In addition, for the sake of argument, note US patent No. 6,175,551 to Awater, see fig. 6, for instance, that shows a fixed delay 66 (that can be used to implement the inherent delay used in May et al) used to delay a modulated signal while a correction signal is generated so that the modulated signal, i.e. output of the delay element, is provided in synchronism with a correction signal, i.e. output of device 84, to a summer 64.

Note that the Declarations, filed by Mr. Neil Birch and Mr. Bernkopf, have been reconsidered, per applicant's request, with the same position taken in the last office action. Accordingly, any reference to such affidavits/declaration will not be responded to for the sake of simplicity.

Applicant further argues that May does not teach a "linear amplifier" or "linearly amplifying". Examiner disagrees. Fig. 1 of the May reference clearly shows the modulated signal linearly amplified up to a maximum, i.e. saturation point. Hence, May does teach a linear amplifier or linearly amplifying, as recited in the rejected claims.

Applicant argues that "The Examiner did not provide any technical analysis as to the compatibility of the peak to average ratio reduction circuit of May with the system of Hedberg. There was no clear articulation of what one of ordinary skill in the art would see in these two references or the general knowledge that would lead him, using only ordinary creativity, to combine these teachings. Further, unlike KSR, the Examiner failed to walk through a logical progression of concepts that would lead one of ordinary skill in the art to the inexorable conclusion that the references should be combined. Rather, the Examiner attempts to support this combination with a conclusory statement about

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that one of skill in the art would combine the references to use May in a CDMA system".

However, examiner notes that it is readily apparent to one skill in the art that both the disclosures of May and Hedberg relate to Peak-to-average power ratio reduction therefore both references are clearly compatible with each other. Hedberg at col. 2, lines 24-25, teaches CDMA systems generate high peak to average power ratio if not properly corrected can lead to degradation of the efficiency of the transmit power amplifier. Therefore, one skill in the art would have been motivated to implement CDMA type modulator taught by Hedberg in May in order to allow the system of May to be used in the CDMA environment with the added benefit to correct the peak to average power ratio so as to avoid degradation efficiency of the transmit amplifier. In addition, note US Patent No. 6,175,551 to Awater et al that recognizes the disadvantage of a large peak-to-average power ratio associated with both OFDM and CDMA systems (see abstract and col. 3, lines 1-8) and further teaches a method and apparatus to reduce the peak-to-average power ratio that is used with either an OFDM modulator or a CDMA modulator see col. 4, lines 47-62.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Jean B Corrielus/

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